Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

The invention claimed is:

1. (Currently amended) A method of generating a cell composition containing cardiomyocytes or cardiomyocyte precursor cells from ~~primate pluripotent stem (pPS) cells obtained from a human blastocyst~~ human embryonic stem (hES) cells, comprising:

a) initiating differentiation of the ~~pPS~~ hES cells in suspension culture by forming embryoid bodies;

b) culturing the initiated cells so that they differentiate ~~into areas that undergo spontaneous contraction~~;

c) harvesting the differentiated cells;

d) separating the harvested cells into fractions ~~according to their~~ based on density; and

e) ~~collecting~~ combining the cell fractions containing cells that express cardiac troponin I (cTnI), cardiac troponin T (cTnT), or atrial natriuretic factor (ANF) from an endogenous gene;

thereby generating a cell composition containing cardiomyocytes or cardiomyocyte precursor cells.

2. (Original) The method of claim 1, wherein the embryoid bodies are plated onto a surface coated with gelatin or Matrigel®.

3. (Currently amended) The method of claim 1, wherein the cells are differentiated in the presence of a nucleotide analog that affects DNA methylation~~; such as 5-aza-deoxy-cytidine~~.

4. (Currently amended) The method of claim 1, wherein the cells are differentiated in a growth environment comprising a morphogen ~~such as activin,~~ and two or more growth factors.

5. (Original) The method of claim 4, wherein the morphogen is an activin, and the growth factors include an insulin-like growth factor and a member of the TGFβ family.

6. (Currently amended) The method of claim 1, wherein the cells are differentiated in a growth environment containing ~~about~~ 20% serum or serum substitute.

7. (Original) The method of claim 1, wherein the harvested cells are separated by density centrifugation.

8. (Currently amended) The method of claim 1, wherein the separating comprises distributing cells in the population ~~according to~~ based on their density, and ~~collecting cells at~~ combining cell fractions with a density between ~1.05 and ~1.075 g/mL.

9. (Currently amended) The method of claim 1, further comprising culturing the ~~collected cells~~ combined cell fractions for at least 1 week in a medium containing a compound capable of forming a high energy phosphate bond, an acyl group carrier molecule, and a cardiomyocyte calcium channel modulator.

10. (Currently amended) The method of claim 9, further comprising culturing the ~~collected cells~~ combined cell fractions for at least 1 week in a medium containing creatine, carnitine, or taurine.

11.-16. (Canceled)